

California Fire Weather Operating Plan For Year 2002



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Cover Page:

Provided by Hot underburn with scorching on the Klamath National Forest, provided by John Snook

I. INTRODUCTION

This document implements the "Interagency Agreement between the federal agencies of the California Wildfire Coordinating Group (CWCG) and the National Weather Service, National Oceanic and Atmospheric Administration." This Agreement is between the National Weather Service (NWS) and member agencies of the CWCG. The NWS plans to change California fire weather coverage assignments beginning in January of 2003. The plan is to move from having five offices (Redding, Reno, Sacramento, Hanford and Riverside) prepare fire weather forecast products to having ten offices (Medford, Reno, Eureka, Sacramento, Monterey, Hanford, Oxnard, Las Vegas, Phoenix and San Diego) provide these products. The districts assigned to each would roughly coincide with the forecast area for which they have public forecast and warning responsibility. All ten offices will provide spot forecasts upon request from their assigned areas. The only change for 2002 is that some of the offices that do not yet have fire weather responsibility have trained IMETs who will be available for deployments. No forecast assignments will change during 2002. However, during 2002 fire season every office that will be serving California will prepare practice products and/or assist other offices in developing additional expertise.

The Interagency Fire Weather Offices at Redding and Riverside will continue providing fire weather products. A User Assessment Team (UAT) has been formed to address the roles of the NWS and the Interagency Fire Weather offices after 2002.

The agreement details the services and support provided by each cooperating, signatory agency. Actions and procedures for obtaining these services are described in this plan, as are support responsibilities. These latter descriptions serve only as general guidelines. The agreement noted above will, as well as the "National Agreement for Meteorological Services in Support of Agencies with Land Management and Fire Protection Responsibilities", in all cases, be the reference documents. Any interim changes to this plan will be documented and attached to this plan. These changes will be disseminated to affected parties.

II. FORECAST DISTRICTS AND RESPONSIBILITIES

Fire weather services will be provided for California by meteorologists in five offices, CWCG (Interagency Fire Forecast/Warning Units (IFFWUs) offices located in Riverside and Redding, CA and National Weather Service Offices in Sacramento, Hanford, CA and Reno, NV (see Appendix B). Forecast districts will align with the boundaries for the Northern and Southern California Geographic Area Coordination Centers (GACCs). The GACC offices will be responsible for all fire weather services, state and federal. The NWS offices will only be responsible for wildfire and federal non-wildfire support.

III. FIRE WEATHER SERVICES AVAILABLE

A. FORECAST SERVICE CATEGORIES

1. BASIC FIRE WEATHER SERVICES

Basic services are provided per the governing agreement. These include meteorological warnings, fire weather watches, forecasts, advisories, observations, and statements, produced in and by IFFWU/NWS offices during normal working hours.

a) Ordering Basic Services

Requesting agencies will order basic services by making direct contact with the appropriate IFFWU/NWS office (Appendix B).

2. ADDITIONAL SERVICES

Additional services are those meteorological services requested by an agency which cannot be provided at a IFFWU/NWS office during normal working hours. Thus, services provided away from the office (such as IMET support and training), or on overtime, are additional services.

Requesting agencies pay overtime, travel, and per diem costs related to additional services. In addition, requesting agencies will pay in-office overtime that directly supports on-site service or services.

a) Ordering Additional Services

Requesting agencies will order and verify additional services through normal agency dispatch channels using MIRPS. This procedure has been adopted so that on-site forecasting requests can be coordinated between agencies, priorities established between conflicting requests, and orders verified for reimbursement per the agreement. The MIRPS printout must accompany IFFWU/NWS claims to requesting agencies. A copy of a MIRPS printout is included (Appendix D).

B. IFFWU/NWS IN-OFFICE FORECAST TYPES

1. General Forecasts

General Fire Weather forecasts will be prepared twice daily during fire season - once in the morning and once in the afternoon. These forecasts will be issued 7 days a week as determined by consensus of the fire service agencies receiving the forecasts and at least once a day, 5 days a week, during non-fire season. Times of release will be agreed upon by the fire weather meteorologists and the fire service agencies within each fire weather geographical area.

a) Afternoon Forecast

Afternoon Forecasts will contain a discussion of meteorological conditions affecting the district and a forecast for the next 48 hours of weather, i.e. state of weather, Lightning Activity Levels (LAL), expected changes in temperature, humidity and wind. An outlook for the next 3 to 5 days will be included. An example of the National Format is shown in Section C. The IFFWUs will continue to use their existing format during the transition.

b) Morning Forecast

Morning Forecasts are an update of the previous afternoon's forecast and contain the same elements.

c) NATIONAL PRE-SUPPRESSION FORECAST FORMAT

(AFTERNOON EXAMPLE)

FIRE WEATHER FORECAST FOR (LOCATION)

FORECAST OFFICE NAME

DATE AND TIME

...HEADLINE... (STRONGLY recommended)...**REQUIRED** for Red Flag Warnings and Fire Watches

.DISCUSSION...(MANDATORY ELEMENT- concise explanation of the current/forecasted fire weather)

UGC/FIPS CODING

GEOGRAPHICAL DESCRIPTORS (including land management governing units and optional fire weather zone numbers)

...RED FLAG WARNING/FIRE WEATHER WATCH HEADLINE (as needed in each appropriate zone grouping) ...

TONIGHT

SKY/WEATHER.....

MAX TEMPERATURE....

24 HR TREND:

MIN HUMIDITY.....

24 HR TREND:

WIND – 20 FT

(slope/valley...general wind...etc>)

(ridge top...etc)

OPTIONAL ELEMENTS...(transport winds, mixing heights, LAL, Haines, etc.)

.FRIDAY (next day)

SKY/WEATHER.....

MIN TEMPERATURE...

24 HR TREND:

MAX HUMIDITY....

24 HR TREND:

WIND – 20 FT

(slope/valley...general wind...etc.)

(ridge top...etc.)

OPTIONAL ELEMENTS...(transport winds, mixing heights, LAL, Haines, etc.)

FRIDAY NIGHT

SKY/WEATHER.....

MIN TEMPERATURE...

MAX HUMICITY...

WIND – 20 FT

(slope/valley...general wind...etc.)

(ridge top...etc.)

SATURDAY (FOLLOWING day)

SKY/WEATHER.....

MIN TEMPERATURE...

24 HR TREND:
MAX HUMIDITY....
24 HR TREND:
WIND – 20 FT
(slope/valley...general wind...etc.)
(ridge top...etc.)

OPTIONAL ELEMENTS...(transport winds, mixing heights, LAL, Haines, etc.)

=
\$\$

NEXT FIRE WEATHER ZONE GROUP

.TONIGHT...
.FRIDAY...
FRIDAY NIGHT...
SATURDAY...

=
\$\$

EXTENDED: **MANDATORY ELEMENT** (Days 3-5 with winds mandatory;
Optional elements if critical)

.SUNDAY...
.MONDAY...
.TUESDAY...

.OUTLOOK (**OPTIONAL**) (Days 6 and 7, days 8-14, 30 and 90 day outlooks
when issued)

NAME (**OPTIONAL**)

NNNN
= \$\$

2. National Fire Danger Rating System (NFDRS) Weather Observation Entry

Afternoon weather observations must be into the Weather Information Management System (WIMS) by 1430 PDT in order to receive NFDRS Predicted Indices by 1530 PDT.

The IFFWU/NWS Offices obtain the weather observations from WIMS and uses this information to make trend forecasts.

3. Fire Weather Zone Trend Forecasts

Fire weather forecast zones (FWFZ) are areas of similar response to weather changes. The FWFZ are established and controlled by the IFFWU/NWS Office. The trend forecasts apply to all of the weather stations within a forecast zone. The Zone/Trend forecasts are used by the NFDRS to generate forecast indices for the next day. Fire weather forecast zones should not be confused with Fire Danger Rating Areas (FDRAs). FDRAs are defined as a geographical area within which the fire danger can be assumed to be uniform. It is relatively homogenous in terms of climate, fuels and topography. The stations associated with the FWFZs are listed in Appendix D. There are no official maps of the FWFZs. The map of the FDRAs is shown in Appendix C. Forecasters are encouraged to use FDRAs and/or geographical identifiers in forecasts, statements and warnings instead of FWFZs.

4. Site Specific Forecasts

Site-specific forecasts are unique weather forecasts for wild/wildland fires, prescribed burns, special projects and other emergency incidents. Site-specific forecasts will be issued only after local specific data is received. WS Form D-1, Items 1-12 (Appendix E) shows the data that is needed. Electronic site-specific forecast request forms are available on the IFFWU and NWS Office web pages. Electronic submission is preferred. Site-specific weather observations must also be provided. The ideal weather observations would include max/min temperature, relative humidity, and wind data for the previous 24-hour period. Dissemination methods for site-specific forecasts will be coordinated between the requesting agencies and the IFFWU/NWS Office. Requests for site-specific forecasts for prescribed burns and special projects should be made to the appropriate office 24 hours in advance.

Site-specific forecast requests will be sent to the appropriate servicing office. These requests need to include time of ignition, forecast periods and desired forecast elements..

5. Smoke Transport and Dispersal

The California IFFWU's will provide general information on statewide mixing heights and transport winds as part of the afternoon general forecast. All IFFWU/NWS offices can provide more detailed smoke dispersion forecasts, but will require additional on-site data. Additional data could include temperature and wind profiles to several thousand feet above the site.

C. ON-SITE SERVICES (ADVANCED TECHNOLOGY METEOROLOGICAL UNIT - ATMU)

1. Introduction/Description

An Advanced Technology Meteorological Unit (ATMU) is the equipment with which an Incident Meteorologist (IMET) can provide on-site forecast service at an incident. ATMUs are designed for rapid transport to the ordering agency's incident. The ordering agency must provide extensive logistical support to the units once they are in the field (see Sec.III.C.4).

Each ordering agency must assure that this vital support is specifically addressed and outlined within its own directives. If this support fails, the unit fails.

Each ATMU consists of two foam-lined containers that are suitable for shipping. The total weight of the ATMU, including containers, is about 200 lbs. All the units contain identical equipment, and can therefore be interchangeably used by any qualified IMET. There are seven of these ATMUs cached in California (See Sec.III.C.5 for locations).

The IMET, forecasting on an incident with an ATMU, functions as a Technical Specialist in the ICS Planning Section. The IMET will bring a separate computer module weighing about 55 pounds. If the incident is a wildland fire, he or she works closely with the Fire Behavior Analyst (FBAN). ATMU service can be ordered at anytime with a resource order. TWO REQUESTS must be placed:

- **OVERHEAD** request for the Incident Meteorologist (IMET).
- **EQUIPMENT** request for the ATMU.

Additionally, the need for MicroRAWS/REMS/Fire RAWS must be determined by the IMET/FBAN and the order placed appropriately. When a MicroRAWS is ordered, a separate MicroRAWS Technical

Specialist needs to also be ordered. Fire RAWS can be ordered through NIFC, which will also include two Technical Specialists.

2. Local Fire Weather District Dispatch Procedures

The request for an IMET and ATMU generally originates at the incident. These requests are sent to the Unit ECC and are then transmitted to the appropriate GACC.

Incident Meteorologists may be ordered directly to an incident **WITHIN THEIR FIRE WEATHER FORECAST DISTRICT** by either GACC. If a district IMET is able to respond, the GACC will determine both ATMU and IMET transportation needs.

3. Inter-GACC dispatch procedures

When:

- A fire weather office cannot fill a request for an IMET within its forecast area, or;
- An IMET is needed for assignment outside his or her forecast area; then the following procedure will be used:

The ordering GACC/IFFWU will coordinate with the Staff Meteorologist at NICC (SMN) to determine national priorities for the resource. If the order can be filled from the other GACC, the receiving GACC will notify the SMN. If the IMET and/or ATMU request cannot be filled in California, the ordering GACC will forward the order to NICC.

4. Logistical Support Provided by Requesting Agencies

ADEQUATE SHELTER: ATMU hardware is quite sensitive to dust, moisture and temperatures greater than 105 F. Shelter should be enclosed, and as wind-proof and dust-free as practical.

110 POWER: 2000 Watts of 60-cycle, 110 AC power are required. Adequate lighting is also needed, as well as a telephone line and instrument.

HELIUM: a half-bottle of helium, available from most welding supply shops, maybe needed.

5. Cache Sites

The ATMUs will be cached by the participating agencies at the following locations:

ATMU	Location	Site Manager
CA-01	Redding	NCSC Fire Cache
CA-03	Redding	NCSC Fire Cache
CA-05	Redding	NCSC Fire Cache
CA-07	Sacramento	MIC Sacramento
CA-02	Hanford	MIC Hanford
CA-04	Riverside	OCC
CA-06	Riverside	USFS Ontario Cache

6. Release Procedures

On release from an incident, the unit will be transported back to the IFFWU/NWS office responsible for the unit or to the cache location. It will be restocked and certified for readiness by the IFFWU/NWS staff. Instructions for shipping will be given to the user by the IMET.

Maintenance due to normal wear and tear on the ATMU is the responsibility of the IFFWU/NWS. ATMU components damaged or lost on an incident are the financial responsibility of the incident.

7. MicroRAWS

Micro Remote Automated Weather Stations (RAWS) are available to be used for site specific weather forecasts. They are available through normal dispatch channels and can also be requested for use in fire management, other emergency operations, and/or ATMU operations. When a MicroRAWS is ordered, a separate MicroRAWS Technical Specialist needs to also be ordered. RAWS observations may be used for site-specific weather forecasts if the observations are representative of the project site. Data is transmitted via satellite.

8. MicroREMS

Micro Remote Environmental Monitoring Stations (REMS) capture weather data for site- specific weather forecasts. MicroREMS do not transmit via satellite so other means of data capture and storage are necessary. Data is not shared with other users.

9. FireRAWS

FireRaws is another type of portable weather monitoring system. A FireRAWS has some enhanced software features and is ordered through NICC. The FireRAWS comes with two Technical Specialists who maintain the system.

D. RED FLAG PROGRAM

The objective of the NWS/IFFWU Red Flag Program is to highlight as far ahead as possible, up to 72 hours, those critical fire weather patterns that will contribute to extreme fire danger and/or fire behavior.

Fire Weather Watches and Red Flag Warnings will normally be issued only after conferring with the affected agencies. This will both reduce overuse of Watches/Warnings and allow for input on environmental conditions and feedback as to the accuracy of the Watch/Warning. However, the ultimate responsibility for the issuance of a Watch/Warning rests with the forecaster. Meteorological Criteria for Red Flag conditions in each Fire Weather District are outlined in Appendix F.

As long as the Watch/Warning is in effect, it will be the headline of the forecast. If, in the judgment of the fire weather forecaster, the watch/warning should be issued sooner than the next forecast, a Red Flag Warning (RFW) will be issued. The office issuing the Watch/Warning will coordinate with the adjacent Fire Weather Offices and the appropriate IFFWU/NWS offices.

The Red Flag Program has the following stages:

1. Watch

Fire Weather Watch: A Fire Weather Watch shall be issued when the forecaster is reasonably confident that a “Red Flag Event” will occur. A Watch should be issued 24 but no more than 72 hours in advance of the event’s expected onset. Professional discretion and special circumstances may allow a Watch to

be issued in the 12-24 hour time period. Dry lightning events are the only time a Fire Weather Watch may be issued or continued less than 12 hours prior to the expected event.

2. Warning

Red Flag Warning: A Red Flag Warning is issued within 24 hours of occurrence. A Warning is intended to tell the user that critical fire weather patterns are occurring or are imminent.

3. Cancellation

Prompt cancellation of either a Watch or a Warning is required. The IFFWU or National Weather Service forecaster shall promptly cancel any Fire Weather Watch or Red Flag Warning when it is no longer valid.

4. Area Coverage and Dissemination

The Watch/Warning may be issued for an entire district or for portions of a district. Dissemination of Watches and Warnings will normally be in conjunction with one of the normal narrative forecasts and/or the Red Flag Warning (RFW) message. Dissemination will be in accordance with agency policies within each GACC. All watches and warnings will be e-mailed to the California Air Resources Board (CARB) at: armet1@arb.ca.gov

E. TRAINING

1. Agency Training:

Fire Weather Meteorologists are available to organize and instruct the weather portions of the fire agencies' training sessions. Agencies should contact the appropriate IFFWU/NWS office to initiate training requests and billing will follow agency procedures.

2. Cross Training

Agencies will make training opportunities available to NWS personnel. NWS will make appropriate training opportunities available to the IFFWU Forecasters.

3. Supplemental Staffing

When necessary, Fire Weather Meteorologists from the NWS will be sent to the Riverside and Redding IFFWUs respectively to provide support during periods of increased fire activity.

High fire activity in California or a depletion of the California Fire Weather Meteorologists due to IMET assignments will trigger this additional required support. In order to assure the needs are met, daily assessments will be done between the offices whenever one of the following occurs:

- When California reaches a preparedness level III or higher; or
- Whenever 3 or more California IMETs are unavailable.

If the office staffing augmentation is needed, the GACC will issue a resource order number.

F. CONSULTATION AND TECHNICAL ADVICE

Fire Weather Meteorologists are available to provide technical assistance to all agencies related to fire weather/fire behavior operations. The IFFWU will provide non-federal, non-wildfire technical support through the Redding and Riverside Units.

1. NFDRS (RAWS & MANUAL)

The Fire Weather Meteorologists are available to provide support for weather station inspections, and any necessary training

2. New Stations

The NWS maintains the master listing of NFDRS Station Numbers and **MUST** be contacted to obtain a NFDRS number. A Fire Weather Meteorologist can also help site weather stations.

3. Other

Fire Weather Meteorologists are available to fire agencies for liaison duties including meteorological requirements, planning and operations. This may be accomplished via weather briefings, conference calls, on-site visits, participation at conferences and meetings, and other activities.

IV. SUPPORT FROM THE REQUESTING AGENCIES

A. FIRE WEATHER OBSERVATIONS

The basic observation time is 1400 PDT (1300 PST). These observations are what the Fire Weather Meteorologist uses to forecast tomorrow's weather. Observations must be entered into WIMS by 1430 PDT (1330 PST). Morning weather observations from selected sites are also essential; times will be established by the IFFWU/NWS Offices.

V. EFFECTIVE DATES OF THE ANNUAL OPERATING PLAN (AOP)

The AOP will be effective from May 1 through the following April 30.

Dan Clark
Chair, CWCG

Elizabeth Morse
NWS, State Liason Officials

Todd Morris

APPENDIX A

CWCG/NWS INTERAGENCY AGREEMENT - DEFINITIONS

A. Geographic Area Coordination Centers: These are interagency centers established to coordinate emergency response activities among all the partner agencies. There are eleven established throughout the United States, which serve as focal points for internal and external requests, which cannot be filled at the local level. There are established, agreed to ordering channels, which provide for rapid: movement of requests, agency review, efficient utilization of resources, and cost effectiveness.

B. Annual Operating Plan: A procedural guide, which describes the services and other resources to be provided by the participating agencies for each calendar year.

C. Fire Weather District: A fire weather district is the area of routine service responsibility as defined in the annual operating plan. This area is usually defined by climatological factors, but may be modified somewhat to the administrative boundaries of the participating agencies.

D. Prescribed Fire: This is a fire burning in wildland fuels according to a planned prescription and confined within planned boundaries for the purpose of achieving specific objectives of resource management. (Prescribed burning is the practice of prescribed fire use).

E. Red Flag Event: A Red Flag Event is a combination of a critical fire weather pattern and critically dry fuels.

F. Additional Weather Services: These are meteorological services uniquely required by participating agencies, which cannot be provided at the IFFWUs/NWS offices during normal working hours.

G. Site Specific Forecasts: Site specific forecasts are essentially spot forecasts tied to a very local piece of geography. They are issued upon the request of participating agencies for wildfires, prescribed burns or other projects. Before the forecast can be issued, the agencies must provide on-site observations.

H. IMET: An Incident Meteorologist is an IFFWU or NWS Meteorologist trained and equipped to provide on-site weather support for the control of large wildfires, land management activities, and other all risk incidents.

I. ATMU: The Advanced Technology Meteorological Unit is a modularized transportable unit containing communications and observational equipment necessary to support a meteorologist preparing on-site forecasts at large wildfires, land management activities, and other all risk incidents.

APPENDIX A (cont'd)

- J. IFFWU** - Interagency Fire Forecast Warning Unit
- K. NWS** - National Weather Service
- L. NIFC** - National Interagency Fire Center
- M. NICC** - National Interagency Coordination Center
- N. SMN** - Staff Meteorologist at NIFC
- O. WFO** - Weather Forecast Office (of the National Weather Service)

O. Sky Cover Terms:

Terms used mainly in aviation forecasting

Clear - Less than 1/10th of the sky covered with clouds; **Scattered Clouds** - Clouds cover between 1/10th and 5/10th of the sky; **Broken Clouds** - Clouds cover between 6/10ths and 9/10ths of the sky; **Overcast** - Sky completely covered by clouds (some small breaks may be present)

Terms are used mainly in forecasts for the general public:

Fair - Means clear or nearly clear, but may include thin high clouds, or scattered “fair weather” cumulus.

During the daytime, the terms “Sunny” or “Mostly Sunny” are often used instead;

Partly Cloudy - Can refer to varying amounts of cloudiness from 3/10ths up to 7/10ths coverage; **Mostly**

Cloudy - Generally used as synonym for Broken Clouds, i.e. cloud coverage 6/10ths through 9/10ths coverage;

Cloudy - Overcast; **Fog** - Fog is simply a cloud in contact with the earth’s surface.

P. Precipitation Qualifiers

Probability Qualifiers:

Slight Chance- indicates 10-20% probability of measurable rain (.01 inch or more); **Chance** -indicates a 30-50% probability; **Likely** - indicates a 60-80% probability; **No qualifier**, for example “rain tonight” means a probability of 80% or higher; **Chance of Wetting Rain(CWR)** - A wetting rain is .10 inches or more.

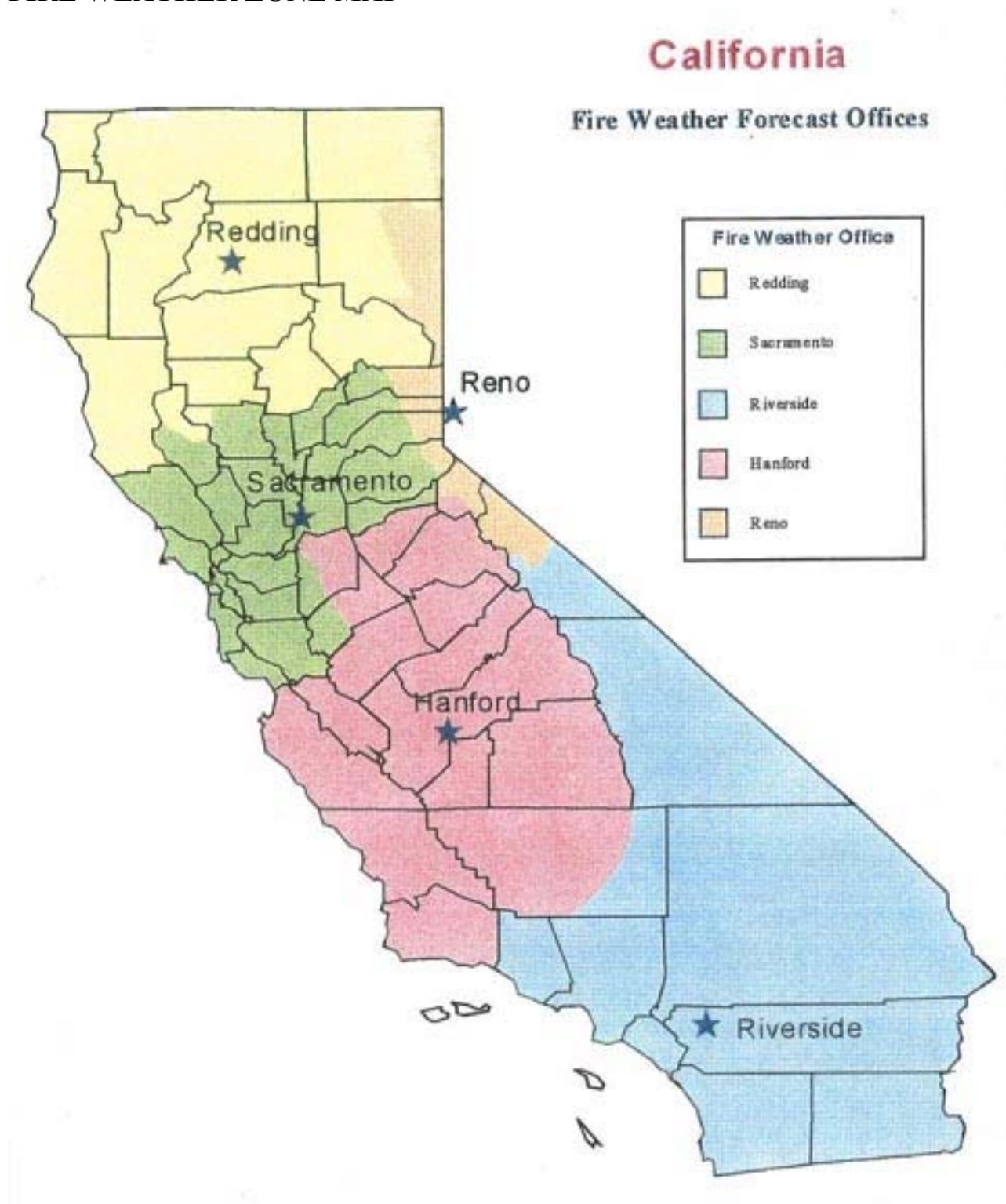
Therefore the CWR is the probability of receiving .10 inches or more.

Area Qualifiers:

Isolated – probability of precipitation at any point within the area is 10-20%; **Scattered** – 30-50%; **Numerous** - 60-70%.

APPENDIX B

FIRE WEATHER ZONE MAP



APPENDIX C



APPENDIX D

FIRE WEATHER DIRECTORY AND STATION LISTS

SAN JOAQUIN VALLEY FIRE WEATHER OFFICE

(Hanford Fire Weather Office)

Address:	National Weather Service 900 Foggy Bottom Road Hanford, CA 93230	Office Hours:	Open 24 hours
Office Telephone:	(559) 584-0583/0585	FWO Staffed:	<u>Fire Season</u> 8 a.m. to 4 p.m.
Office FAX			<u>Non-Fire Season</u> M-F 8a.m. to 4p.m.
Office Unlisted			
Office (24 hours)	(559) 584-9051/9521		
Email Address	Cynthia.Bean@noaa.gov		
Home Telephone	Cynthia Bean		
Internet Home Page:	http://www.wrh.noaa.gov/Hanford		
Narrative Forecast Dissemination:	WIMS; Internet; CDF e-mail		

The following table shows the Weather Forecast Trend Zones. These numbers are entered on the first page of the WIMS station catalog under the Forecast Zone field (See WIMS User Guide pg. 6-7). These zones are not to be used to report Fire Danger Adjectives.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Arroyo Grande	044915	500	Uhl Hot Springs	044712	529
Figueroa	045201	500	Bear Peak	044730	530
Montecito	044916	500	Democrat Springs	045002	530
Los Prietos	045203	500	Kernville	045005	530
Vandenberg #1	045204	500	South Fork	045012	530
Vandenberg	045219	500	Walker Pass	045014	530
Las Tablas	044904	520	Crane Flat	044102	531
Pozo	044908	520	Crane Flat RAWS	044195	531
Big Sur	044302	521	Mariposa Grove	044113	531
Arroyo Seco	044301	522	Tuolumne Meadows	043611	531
Hastings	044318	522	Wawona	044109	531
Hunter Liggett	044317	522	White Wolf	043612	531
Bradley	044303	523	Yosemite Valley	044111	531
Hollister	044406	523	Clear	044299	532
Bear Gulch	044407	524	Fence Meadow	044503	532
Hernandez	044409	524	Miami	044110	532
Sand Creek	044518	529	Minarets	044203	532
Trimer	044510	529			

HANFORD WEATHER TREND ZONES (cont'd)

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Panoche	044514	524	Park Ridge	044713	532
Parkfield	044310	524	Dinkey	044521	533
Santa Rita	044408	524	High Sierra	044520	533
Branch Mountain	044901	525	Mount Tom	044511	533
Carrizo	044916	525	Blackrock	044722	534
La Panza	044914	525	Breckenridge	045009	534
Kettleman Hills	044602	526	Cedar Grove	044719	534
Los Banos	044003	526	Chimney Peak	042721	534
Pleasant Valley	044506	526	Johnsondale	044707	534
Batterson	044207	528	Peppermint	044726	534
Fancher Creek	044516	528	Oak Creek	043705	534
Jerseydale	044105	528	Rattlesnake	044728	534
Mariposa	044106	528	Shadequarter	044724	534
North Fork	044204	528	Sugarloaf	044729	534
Shaver	044522	528	Wolverton	044732	534
Ash Mountain	044701	529	Esperanza	043208	539
Fountain Springs	044704	528	Green Spring	043613	539
Fountain Springs RAWS	044731	528	Groveland	043603	539
Hurley	044517	529	Mount Elizabeth	043605	539
Milo	044708	529	Blue Mountain	043203	540
Mountain Rest	044505	529	Pinecrest	043606	540
Oak Opening	044717	529			
Pinehurst	044508	529			

APPENDIX D (cont'd)

FIRE WEATHER DIRECTORY AND STATION LISTS

SACRAMENTO FIRE WEATHER OFFICE			
Address:	National Weather Service 3310 El Camino Avenue, Rm 226 Sacramento, Ca 95821-6308	Office Hours:	Open 24 hours
Office Telephone:	(916) 979-3047/3045	FWO Staffed:	<u>Fire Season</u> 7:30a.m. to 4:30 p.m.
Office FAX			<u>Non-Fire Season</u> Same (M-F)
Email Address	Michael.C.Smith@noaa.gov Basil.Newmerzhycky@noaa.gov		
Home Telephone	Mike Smith Basil Newmerzhycky		
Internet Home	http://www.wrh.noaa.gov/Sacramento		
Page:			
Narrative Forecast	WIMS, Internet, CDF email		
Dissemination:			

The following table shows the Weather Forecast Trend Zones. These numbers are entered on the first page of the WIMS station catalog under the Forecast Zone field (See WIMS User Guide pg. 6-7). These zones are not to be used to report Fire Danger Adjectives.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Forest Hill	041902	535	Oakland South	043403	550
Saddleback	041304	536	Chalks RAWS	043801	550
White Cloud	041806	536	Corralitos RAWS	043802	550
Duncan Peak	041901	536	Corralitos Manual	043805	550
Georgetown	042606	538	Pilot Hill	042609	552
Hell Hole	042608	538	Ben Bolt	042612	552
Owens Camp	042611	538	Mt Zion	042701	552
Beaver	042601	538	Wolf Mountain	041805	554
Bald Mountain	042603	538	Konocti	041407	558
Truckee	041804	541	Konocti RAWS	041411	558
Black Diamond	043008	547	St Helena	042106	558
Las Trampas	043009	547	Santa Rosa	042009	559
Briones	043010	547	Hawkeye	042010	559
Sunol	043401	547	Gold Ridge	042011	559
Rose Peak	043404	547	Rock Springs	042301	559
Morgan Hill	043903	547	Woodacre	042302	559
Del Puerto	043501	547	Marin Civic Center	042307	559
Palo Alto	043910	548	Sky Oaks	042307	559
Emerald Lake	043307	549	Brooks	042202	561
La Honda	043304	549	Pole Mtn	042008	562
Los Altos	0433NA	549	Bear Valley	042303	562
Oakland North	043402	550	Muir Woods	042305	566

APPENDIX D (cont'd)

FIRE WEATHER DIRECTORY AND STATION LISTS

REDDING INTERAGENCY FIRE FORECAST WARNING OFFICE

Address:	6101 Airport Way Redding, CA 96002	Office Hours:	<u>Fire Season</u> 7 a.m. to 5 p.m.
Office Telephone:	(530) 226-2730		<u>Non-Fire Season</u>
Office FAX			M-F 7 a.m. to 5 p.m.
Home Telephone	Chris Fontana John Snook Brenda Graham		
E-mail Address	cfontana@fs.fed.us		
CDF e-mail	Redding_Fwx@fire.ca.gov		
Internet Forecast	http://www.fs.fed.us/r5/fire/north/fwx		

Narrative Forecast Dissemination: WIMS; CDF Email; USFS IBM;NPS

The following table shows the Weather Forecast Trend Zones. These numbers are entered on the first page of the WIMS station catalog under the Forecast Zone field (See WIMS User Guide pg. 6-7). These zones are not to be used to report Fire Danger Adjectives.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Big Hill	040402	555	Hayfork	040503	591
Brush Mtn LO	040404	555	Scorpion	040517	591
Hoopa	040408	555	Trinity Camp	040516	591
Mad River	040507	555	Weaverville	040510	591
Ruth	040508	555	Backbone	040518	591
Big Hill	040402	555	Sugarloaf	040614	592
Eel River Camp	040421	556	Ash Creek	040244	593
Alderpoint	040423	556	Oak Mountain	040635	593
Ship Mtn	040105	556	Mt. Shasta	040217	593
Booneville	041001	557	Sims	040618	593
Eel River USFS	041005	557	Soldier Mtn	040630	593
Mc Guires	041017	557	Pattymocus	040812	594
Rodeo Valley	041015	557	Yolla Bolla	040511	594
Soda Creek	041406	557	Corning	040814	595
Mendocino Pass	041018	557	Thomes Creek	040816	595
Gasquet	040102	560			
Maple Creek	040424	560	Alder Springs	041101	595
Schoolhouse	040425	560	Arbuckle Basin	040632	595
Slater Butte	040225	585	Eagle Peak	040802	595
Sawyers Barr	040222	586			

Redding Weather Forecast Trend Zones (cont'd)

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Ukonom	040231	586	Stonyford	041503	595
Blue Ridge (KNF)	040203	586	Redding	040611	595
Collins Baldy	040237	587	Whiskeytown	040628	595
			Oak Bottom	040636	595
			Sacramento NWR	041102	595
			High Glade L.O.	041402	595
Callahan	040204	587	Cohasset	041211	596
Oak Knoll	040218	587	Chico	041210	596
Quartz Hill	040239	587	Whitmore	040615	596
			Inskip	040803	596
			Bangor	041201	596
Weed	040228	588	Carpenter Rdg	040213	597
Brazzi Ranch	040242	588	Chester	040904	597
Lower Klamath	040310	589	Colby Mtn LO	040801	597
Juanita Lake	040240	589	Ladder Butte	040723	597
Van Bremmer	040243	589	Lassen Lodge	040815	597
Ash Valley	040726	590	Manzanita Lk	040609	597
Indian Well	040233	590	Mt. Harkness	040908	597
Juniper Creek	040308	590	Summit (Hat Mtn.)	040633	597
Rush Creek	040312	590	Westwood	040719	597
			Bogard	0400703	598
Canby	040303	590	Grasshopper	040721	598
Devil's Garden	040309	590	Laufman	040709	599
Round Mtn	040221	590	Pike Co. LO	041701	599
Timber Mtn LO	040306	590	Quincy	040910	599
Big Bar	040501	591	Smith Peak	040911	599
Friend Mtn	040512	591	Pierce	040915	599
			Cashman	040916	599

APPENDIX D (cont'd)

FIRE WEATHER DIRECTORY AND STATION LISTS

RIVERSIDE INTERAGENCY FIRE /FORECAST WARNING OFFICE

Address: Operations & Coordination Center **Office Hours:** Fire Season
2524 Mulberry Street
Riverside, CA 92501
6 a.m. to 5 p.m.

Office Telephone: (909) 276-6520/6750 Non-Fire Season
(909) 782-4852
M-F 6a.m. to 5 p.m.

Office FAX

Home Telephone Ron Hamilton
Tom Rolinski
Harold Coffey
Matt Shameson

E-mail Address rhamilton01@fs.fed.us

Internet Address Riverside_FWX@fire.ca.gov

Internet Forecast <http://www.fs.fed.us/r5/fire/south/fwz>

Narrative Forecast Dissemination: WIMS; Internet; CDF Email

The following table shows the Weather Forecast Trend Zones. These numbers are entered on the first page of the WIMS station catalog under the Forecast Zone field (See WIMS User Guide pg. 6-7). These areas are not to be used to report Fire Danger Adjectives.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Rose Valley	045211	502	Lytle Creek	045108	510
Chuchupate	045302	503	Mill Creek	045109	510
Ozena	045303	503	Banning	045601	510
Casita	045308	504	Devore	045113	510
Ranchita	045212	505	Big Pine	045102	511
Temescal	045307	505	Strawberry Pk	045110	511
Cheesborough	045313	505	Rock Camp	045111	511
Saugus	045412	505	Mormon Rocks	045114	511
Clear Creek	045405	506	Fawnskin	045101	511
Vincent	045425	506	Converse	045105	511
Oak Flat	045431	506	Cranston	045606	512
Acton	045438	506	Keenwild	045604	513
Camp 9	045441	506	Kenworthy	045605	513
Big Pine	045401	507	Vista Grande	045612	513
Montecito	045218	508	Cameron	045704	513
Malibu	045433	508	Descanso	045707	513
Santa Fe Dam	045437	508	Oak Grove	045710	513
Beverly Hills	045442	508	Pine Hills	045711	513
			Laguna Peak	045709	513

Riverside Weather Forecast Trend Zones (cont'd)

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Case Springs	045731	508	Apple Valley	045117	514
Roblar	045732	508	Round Valley	044803	517
Los Flores	045733	508	Independence	044804	517
Little Tujunga	045411	509	Benton	043708	518
Henning	045439	509	Crestview	043709	518
Temescal	045611	509	Rock Creek	043710	518
Corona	045618	509	Golden	045119	519
El Cariso	045619	509	Salt Wells	045120	519
Alpine	045701	509	Poppy Park	045440	519
Goose Valley	045724	509	Lost Horse	045614	519

APPENDIX D (cont'd)

FIRE WEATHER DIRECTORY AND STATION LISTS

RENO FIRE WEATHER OFFICE/NEVADA FORECAST OFFICE

Address:	National Weather Service 2350 Raggio Parkway Reno, NV 89512-3900	Office Hours:	Open 24 Hours
Office Telephone:	(775) 673-8105/8107	FWO Staffed:	<u>Fire Season</u> 6:00 am to 4:00 p.m. <u>Non Fire Season</u> 8:00 a.m. to 4:00 p.m.
Office FAX			
Home Telephone	Rhett Milne		
E-mail Address	Rhett.Milne@noaa.gov		
Internet Address	http://www.wrh.noaa.gov/Reno		
Narrative Forecast Dissemination: WIMS; CDF Email; Internet			

The following table shows the Weather Forecast Trend Zones. These numbers are entered on the first page of the WIMS station catalog under the Forecast Zone field (See WIMS User Guide pg. 6-7). These zones are not to be used to report Fire Danger Adjectives.

Station Name	WIMS ID	Trend Zone	Station Name	WIMS ID	Trend Zone
Cedarville	040307	570	Bull Flat	040728	572
Fox Mountain	260110	570	Horse Lake	040727	572
Catnip Mountain	260109	570	Blue Door	040725	572
Juniper Springs	260112	570	Ash Valley	040726	572
Barrel Springs	260111	570	Juniper Creek	040308	572
Observation Mtn	040713	571	Bridgeport	043702	576
Buffalo Creek	260113	571	Walker	043707	576
Ravendale	040714	572	Markleeville	042802	576
Susanville	040711	572	Meyers	042607	542
Likely	040799	572	Incline	260115	542
Luufman	040709	572			

APPENDIX D (cont'd)

FIRE WEATHER DIECTORY

AREA FORECAST OFFICE

Monterey, California

Address:	National Weather Service 21 Grace Hopper Avenue Monterey, CA 93943-5505	Office Hours:	Open 24 Hours
Office Telephone:	(831) 656-1710 (831) 291-7767		
Office FAX			
E-mail Address	David.Reynolds@noaa.gov		
Fire Weather Program Leader:	John Ertl		
Meteorologist in Charge:	David Reynolds		

AREA FORECAST OFFICE

Oxnard, California

Address:	National Weather Service 520 N. Elevar Street Oxnard, CA 93030	Office Hours:	Open 24 Hours
Office Telephone:	(805) 988-6619/6620		
Office FAX			
E-mail Address	Todd.Morris@noaa.gov		
Fire Weather Program Leader:	Joe Sirard		
Meteorologist in Charge:	Todd Morris		

AREA FORECAST OFFICE

Eureka, California

Address:	National Weather Service 300 Startare Drive Eureka, CA 95501	Office Hours:	Open 24 Hours
Office Telephone:	(707) 442-2171		
Office FAX			
E-mail Address	Jeff.Tokin@noaa.gov		
Fire Weather Program Leader:	Jeff Tokin		
Meteorologist in Charge:	Nancy Dean		

APPENDIX D (cont'd)

FIRE WEATHER DIRECTORY

AREA FORECAST OFFICE

San Diego, California

Address: National Weather Service Weather
11440 W. Bernardo Court, Suite 230
San Diego, CA 92127-1643
Office Hours: Open 24 Hours

Office Telephone: (858) 675-8700

Office FAX

E-mail Address Dan.Keeton@noaa.gov

Fire Weather Program Leader: Ted MacKechnie

Meteorologist in Charge: Dan Keeton

AREA FORECAST OFFICE

Medford, Oregon

Address: National Weather Service
4003 Cirrus Drive
Medford, OR 9750493030
Office Hours: Open 24 Hours

Office Telephone: (541) 776-4303

Office FAX

E-mail Address Roger.M.Williams@noaa.gov

Fire Weather Program Leader: Fredrick Bunnag

Meteorologist in Charge: Roger Williams

AREA FORECAST OFFICE

Las Vegas, Nevada

Address: National Weather Service
7851 Industrial Rd.
Las Vegas, NV 89139
Office Hours: Open 24 Hours

Office Telephone: (702) 263-9747

Office FAX

E-mail Address Jim.Harrison@noaa.gov

Fire Weather Program Leader: Jim Harrison

Meteorologist in Charge: Ron McQueen WCM (acting MIC)

APPENDIX D (CONT'D)

FIRE WEATHER DIRECTORY

WESTERN REGION HEADQUARTERS			
Address:	National Weather Service Western Region Headquarters 125 So. State Street, Room 1210 Salt Lake City, UT 84138-1102	Office Hours:	8am to 4:30 p.m. MDT
Office Telephone:	(801) 524-4000		
Office FAX			
E-mail Address	Scott.Birch@noaa.gov		
Fire Weather Program Leader, Meteorological Service Division: Scott Birch			
Home:	(801) 776-1296		
NATIONAL WEATHER SERVICE HEADQUARTERS			
Address:	National Weather Service W/OM12 1325 Eastwest Highway Silver Spring, MD 20910		
Office Telephone:	(301) 713-1970 ext 107		
Applied Services Program Leader, Weather Service Headquarters: Jim Lee			
E-mail Address:	James.E.Lee@noaa.gov		

APPENDIX D (Con't)

FIRE WEATHER DIRECTORY

U.S.D.A. FOREST SERVICE OPERATIONS OFFICES

North Operations

South Operations

Address: U.S.D.A. Forest Service
6101 Airport Road
Redding, CA 96002
Office Telephone: (530) 226-2801
(530) 226-2800 (24 Hour)
Office FAX (
Green Phone 9-6223-79
Pat O'Bannon and Tom Hatcher pobannon@fs.fed.us
thatcher@fs.fed.us
E-mail Address

Address: U.S.D.A. Forest Service
2524 Mulberry Street
Riverside, CA 92501
Office Telephone: (909) 320-6103
Office FAX
Green Phone 9-5222-83
George Motschall gmotschall@fs.fed.us
E-mail Address

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION

Sacramento Command Center

Address: P.O Box 944246
Sacramento, CA 94244-2460
Office Telephone: (916) 653-8360 (916) 653-8362 (24 Hour)
Office FAX
Green Phone 9-4223-66/67
Fire Weather Pete Guilbert
Program Manager
E-mail Address pete_guilbert@fire.ca.gov

BUREAU OF LAND MANAGEMENT

California State Office

Address: 2950 Riverside Dr
Susanville, Ca 96130
Office Telephone: (530) 257-5381 **Office Fax:**
Program Leader: Art Porter
E-mail Address: aporter@blm.gov

APPENDIX D (cont'd)

FIRE WEATHER DIRECTORY

NATIONAL PARK SERVICE			
Pacific West Regional Office			
Address:	1111 Jackson St. Oakland, Ca 94592		
Office Telephone:	(415) 427-1371		
Office FAX:			
E-mail Address	tom_nichols@nps.gov		
Program Leader:	Tom Nichols		

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION			
Northern Region		Southern Region	
Address:	CDF 6105 Airport Road Redding, CA 96002	Address:	CDF 2524 Mulberry Street Riverside, CA 92502
Office Telephone:	(530) 224-2466 (24 Hrs.)	Office Telephone:	(909) 782-4169
Office FAX	(530) 226-2742	Office FAX	(909) 782-4900
Green Phone	9-6223-66/67	Green Phone	9-5222-66/67
E-mail Address	RCC_ECC@fire.ca.gov	E-mail Address	RSS_ECC@fire.ca.gov

OFFICE OF EMERGENCY SERVICES			
OES State Headquarters		OES State Operations Coord. Center	
Address:	Kim Zagaris 2800 Meadowview Road Sacramento, CA 95832	Address:	2524 Mulberry Street Riverside, CA 92502
Office Telephone:	(916) 262-1685	Office Telephone:	(909) 782-4174
Office FAX	(916) 262-1621 (24 Hrs.)	Office FAX	
E-mail address	Kim_Zagaris@oes.ca.gov	E-mail address	

APPENDIX E RESOURCE ORDER FORM

New Order Information											
1. Initial Date Time		2. Incident/Project Name		3. Incident/Project Number		4. Office Reference Numbers					
04/05/01 10:42 PDT				CA							
5. Location Description											
5. Response Area		Qtr	Qtr	6. Sec	Town	Range	Meridian	Latitude	Longitude		8. Incident Base Phone
							S				
Z. Map Reference		9. Jurisdiction/Agency				10. Ordering Office		Incident Type			
								Wildland Fire			
Air Contact		Frequency		(Tx Freq)		Tone		Ground Contact		Frequency (Tx Freq) Tone	
Frequencies		Base Information		Base		Base		Base		Base	
FAA Locations		Base Information		Base		Base		Base		Base	
Other Aircraft/Hazards											

APPENDIX F **FIRE WEATHER SPECIAL FORECAST REQUEST (FORM NWS D-1)**

I. REQUESTING AGENCY WILL FURNISH:									
1. NAME OF FIRE OR OTHER PROJECT					2. CONTROL AGENCY			3. REQUEST MADE	
								TIME	DATE
4. LOCATION (1/4 Sect; Sect; Twp; Range)					5. DRAINAGE NAME			6. EXPOSURE	
7. SIZE OF PROJECT (Acres)*					8. ELEVATION*		9. FUEL TYPE		10. PROJECT ON
					TOP	BOTTOM			<input type="checkbox"/> GROUND <input type="checkbox"/> CROWNING
11. WEATHER CONDITIONS AT PROJECT OR FROM NEARBY STATIONS									
PLACE	ELEV- ATION	OB TIME	WIND DIR./VEL.		TEMP.		# (leave blank)		REMARKS <small>Indicate rain, thunderstorms, wind and 10ths of cloud cover</small>
			20 FT.	Eye Lvl	DRY	WET	RH	DP	
12. SEND FORECAST TO:		PLACE				VIA		ATTN:	
II. FIRE WEATHER FORECASTER WILL FURNISH:									
13. FORECAST & OUTLOOK (specify wind - 20 foot or eye level)								TIME & DATE: _____	
NAME OF FIRE WEATHER FORECASTER								FIRE WEATHER OFFICE	
III. REQUESTING AGENCY WILL COMPLETE UPON RECEIPT OF FORECAST									
FORECAST RECEIVED:			TIME+		DATE		NAME		
Explanation of Symbols:			+ Use 24 hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015 * For concentrations (as groups of lightning fires) specify "Concentration" then give number of fires and size of largest. If concentrations are in more than one drainage, request special forecast for each drainage. # No entry necessary. To be computed by the Fire Weather Forecaster.						

APPENDIX G

FIRE WEATHER WATCH/RED FLAG WARNING CRITERIA

HANFORD

1. Severe drying conditions with humidities dropping 30 percent or more into the low teens or single digit numbers.
2. Sustained winds greater than 25 mph and relative humidities less than 15 percent.
3. Sustained relative humidities less than 10 percent.
4. Dry lightning: See Appendix K.

REDDING

1. Foehn Wind Patterns

Use the matrix below to guide decisions on Watch/Warning issuance for Foehn-type wind patterns. The most common application of this would be during Sacramento Valley/Foothill North winds. This matrix is also applicable to East winds down the Lassen/Plumas western slopes and down the Coast Range western slopes.

The matrix assumes 1 hr. and 10 hr. fuel moistures are low, annual grasses are cured, and that no wetting rain has fallen in the last 24 hours. A general guide would be that if the expected wind conditions are less than 16 hours away, use a Red flag Warning otherwise use a Fire Weather Watch.

Relative Humidity	Sustained 20' Wind Speed			
	<i>(note: the wind event should be expected to last at least 8 hours)</i>			
	6-11 mph	12-20 mph	21-29 mph	30+ mph
Daytime <u>Minimum</u> RH 29-42% and/or Nighttime <u>Maximum</u> RH 60-80%				W
Daytime <u>Minimum</u> RH 19-28% and/or Nighttime <u>Maximum</u> RH 46-60%			W	W
Daytime <u>Minimum</u> RH 9-18% and/or Nighttime <u>Maximum</u> RH 31-45%		W	W	W
Daytime <u>Minimum</u> RH <9% and/or Nighttime <u>Maximum</u> RH <30%	W	W	W	W

APPENDIX G (cont.'d)

FIRE WEATHER WATCH/RED FLAG WARNING CRITERIA

REDDING (cont.'d)

2. Dry Lightning. See Appendix K.
--

3. Other

Other possible meteorological events that could trigger a Watch/Warning in the Redding fire Weather district include effects of strong general winds surfacing, with no rain expected to accompany the event. Examples:

- | |
|--|
| <ul style="list-style-type: none">• Strong winds with a dry cold front.• Surfacing mountain waves east of the Cascade/Sierras |
|--|

APPENDIX G (cont.'d)

FIRE WEATHER WATCH/RED FLAG WARNING CRITERIA

SACRAMENTO

Drying Winds (normally during the hot and dry weather of fire season which runs approximately from late May to the middle of November.)

Use the matrix below to guide in decisions on Watch/Warning issuance. The Watch/Warning criteria are most commonly met during strong north to northeast wind episodes which normally occur about one day after the strongest winds hit the northern Sacramento Valley or Lassen/Plumas west slopes. These types of winds generally have their greatest effect on the foothills and lower elevations of the Sierra and along the coastal range especially on the west side of the east San Francisco Bay Hills. The matrix assumes 10 hour fuel moisture of less than 5%, annual grasses are cured and that no wetting rain (greater than 0.10 inch) has fallen in the last 24 hours. Generally if the event is less than 12 hours away, issued the Red Flag Warning, otherwise issued a Fire Weather Watch. Borderline criteria for a Watch or Warning should be coordinated with the appropriate agency

Sustained 20 foot wind speed (Wind event should
Be expected to last at least 8 hours)

6-11 mph 12-20 mph 21-29 mph 30+ mph

Relative Humidity

Daytime Minimum RH 29-42%

and/or

Nighttime Maximum RH 60-80%

W

Daytime Minimum RH 19-28%

and/or

Nighttime Maximum RH 46-60%

W

W

Daytime Minimum RH 9-18%

and/or

Nighttime Maximum RH 31-45%

W

W

W

Daytime Minimum RH <9%

and/or

Nighttime Maximum RH <30%

W

W

W

W

FIRE WEATHER WATCH/RED FLAG WARNING CRITERIA SACRAMENTO (cont'd)

Dry Thunderstorms: See Appendix K.

FIRE WEATHER WATCH/RED FLAG WARNING CRITERIA

RIVERSIDE

1. Sustained winds greater than 25 mph and relative humidity less than 15%.
2. Dry lightning: See Appendix K.
*** The Riverside IFFWU will issue Strong Wind Event notices to the fire agencies when sustained winds exceed 25 mph and when other criteria are not met nor close to being met. ***

RENO

IF: 10 hr Fuel Moisture is equal to or less than 5%, **and** Live Fuel Moisture is equal to or less than 120%, **and** Forecast Minimum Relative Humidity is equal to or less than 15%

THEN IF: Sustained winds are equal to or greater than 20 mph for 12 hours or more, **or** Cold Frontal passage with Wind Gusts equal to or greater than 30 mph, **or** Dry Thunderstorms cover 15% or more of the Forecast Area

THEN Issue the Appropriate Fire Weather Watch or Red Flag warning

APPENDIX H

INTERAGENCY AGREEMENT BETWEEN THE FEDERAL AGENCIES OF THE CALIFORNIA WILDFIRE COORDINATING GROUP AND THE NATIONAL WEATHER SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION.

Interagency Agreement Between the Federal Agencies As Members of the California Wildfire Coordinating Group and the National Weather Service National Oceanic and Atmospheric Administration

Parties

This document constitutes an agreement between the Federal, State and Local agencies of the California Wildfire Coordinating Group (CWCG) and the National Weather Service (NWS) of the National Oceanic and Atmospheric Administration, U.S. Department of Commerce. The NWS is charged with providing weather forecasts to the Nation. The CWCG agencies are charged with providing agency fire managers with fire behavior forecasts for the state.

The CWCG is comprised of the following Local, State and Federal agencies having responsibility for the protection of life, property, and resources from the threat of wildfire within the State of California: United States Forest Service [U.S. Department of Agriculture]; United States Bureau of Land Management [U.S. Department of the Interior]; National Park Service [U.S. Department of the Interior]; Bureau of Indian Affairs [U.S. Department of the Interior]; California Department of Fish and Wildlife; and the California Department of Forestry. A list of contact points for the CWCG is provided as Attachment A to this document.

Authorities

The NWS is authorized to enter into this agreement pursuant to the Department of Commerce's Joint Project Authority, 15 U.S.C. & 1525, which provides that the Department may enter into joint projects with nonprofit, research, or public organizations on matters of mutual interest, the cost of which is equitably apportioned. The NWS has programmatic authority to collect and disseminate weather and climate observations pursuant to 15 U.S.C. & 313. This agreement is authorized under the Cooperative Forest Assistance Act, 16 U.S.C. & 2101 et seq.

III. Purpose

This agreement allows the NWS and CWCG to cooperate on fire weather services which are provided in California. The NWS provides Fire Weather Forecasts and Warnings and the CWCG agencies provide Fire Behavior Predictive Forecasts for the protection of all California Wildlands. It provides a framework for mutual cooperation and support between CWCG and NWS under which NWS will provide fire weather forecasts and warnings and the CWCG member agencies will provide information and products for fire behavior predictive forecasts. It is the objective of the NWS and CWCG to ensure that quality of service is maintained through a mutual analysis of services provided, therefore, the NWS and CWCG will document and monitor the accuracy and timeliness of forecast services and develop standards for forecasts, warnings, and behavior predictive services within California. This agreement also establishes interagency relationships and specifies financial and other obligations of NWS and the CWCG agencies.

NWS and CWCG have determined that the mutual cooperation, staffing, and future service transfer arrangements outlined in this agreement are best accomplished with the participation of both parties.

IV. Mutual Interest and Benefit

A. This agreement is consistent with, "The National Agreement for Meteorological Services in Support of Agencies with Land Management and Fire Protection Responsibilities," Weather Service Operations Manual Chapter D-06, Appendix B (Issued 08/22/91), which identifies the meteorological services to be provided, establishes the interagency relationships, and defines financial and other obligations among the parties.

B. The provision of fire weather forecasts and warnings is, critical to the decisions of CWCG agencies charged with fire management activities when human lives and valuable natural resources are at risk. This cooperation is necessary and essential to the mission of the NWS and CWCG because it is part of the mission of NWS to provide fire weather forecasts/warnings and part of the mission of the CWCG agencies to develop Fire Behavior Predictive Forecasts. The NWS forecasts and warnings are used by the CWCG agencies as critical building blocks of information in their decision making processes which are essential to the success of fire management actions.

C. The duties of CWCG agencies include analysis and interpretation of fire weather forecasts to produce fire behavior predictions that are used to make decisions essential to the success of fire management actions. The CWCG agencies will provide these fire behavior predictions to NWS.

D. To ensure that fire weather predictions and warnings effectively support fire behavior predictions, NWS and CWCG agree on the requirement of close coordination and cooperation on services and products provided. The NWS and CWCG will cooperate to ensure there is no overlap of services and products in order to minimize duplication of efforts and improve efficiency and effectiveness.

E. The NWS has staffing at its weather offices to provide needed and requested fire weather services to field fire managers from local, State, and Federal agencies within California. The role of the NWS extends to critical events which require special warnings.

F. The CWCG agencies have specialized staffing at their Geographic Area Coordination Centers (GACC) to analyze and interpret fire behavior predictive services and products to meet statewide fire management needs. The CWCG agencies also have qualified fire weather and behavior specialists and fire managers who are trained to analyze and interpret weather information to meet local fire management needs.

Conclusion

Due to potential overlap of NWS and CWCG agency missions and the mutual mission in the protection of human lives (including Firefighters) and the risk to natural/man made resources, the NWS and CWCG agree to cooperate and share in the development of fire weather prediction services and fire behavior predictive services necessary to the protection of human life and the resources of California.

V. Background

A. CWCG

1. The CWCG agencies consider the development of Fire Behavior Predictive Service to be a part of their mission necessary to protection life and property. Accordingly, the CWCG agencies will not relinquish this responsibility to another agency.
2. Redding and Riverside are the two focal points within California for the mobilization, demobilization, and pre-positioning of personnel and resources for all the wild land fire management agencies within California. To make fire management decisions on mobilization, demobilization, and pre-positioning of personnel and resources, the IFFWUs at the GACC's are required by CWCG to provide daily (at times more often), one to ten day, and even thirty to ninety day, fire weather and fire behavior predictions that are statewide or for the Western United States.
3. Fire protection within California is made efficient by the statewide exchange among Federal, State, and local agencies of their responsibilities for the protection of certain lands. Non-federal wild land fire management agencies are by agreement protecting Federal lands and, therefore, require NWS fire weather forecasts and warnings. Due to this practice, it is essential that all fire protection agencies receive a seamless fire weather and fire behavior predictive forecast.
4. Fuels management is a priority for all wild land fire agencies within California. This non-wildfire activity is not part of the mission of the NWS, but it is part of the mission of the wild land fire agencies. The California GACC's are charged by CWCG with the coordination and oversight of personnel and resources for accomplishing these projects. This responsibility includes the coordination with the county air resource boards on smoke management.
5. For these reasons, the CWCG has funded dedicated fire weather forecasters in Redding and Riverside to consolidate all NWS fire weather forecasts and warnings and to provide fire behavior predictions and assessments to fire managers on a daily basis and

as requested for wild land fires and fire use projects.

6. Coordination and notification between the NWS offices serving California and CWCG IFFWUs on issuance of "Fire Weather Watch's" and "Red Flag Warnings" is critical. This same coordination will occur in the timing for termination of "Fire Weather Watches" and "Red Flag Warning."

7. The Redding and Riverside IFFWUs will play an active role in the fire weather program in California. The IFFWUs will be responsible for administration of the California smoke management program, as well as for providing fire behavior and meteorological consultation to fire managers for wildfire and prescribed fire planning and for actions in coordination with NWS for statewide seamless forecasts. The vision of CWCG is that fire behavior predictive forecasts will be required at Redding and Riverside past the term of this agreement and will be part of the next agreement.

8. The NWS will continue to provide agency personnel to CWCG GACCs in Redding and Riverside until the NWS and CWCG can jointly demonstrate and agree that removing NWS employees will not degrade fire weather forecasts and warning information and products essential for fire managers to protect human life and valuable natural resources.

B. NWS

1. The NWS considers the provision of fire weather forecasts and warnings to be part of its mission to protect life and property. Accordingly, the NWS will not relinquish this responsibility to any other Federal agency.

2. Fire weather services for California will be provided by Weather Forecast Offices (WFO) in Reno, Nevada, Sacramento, California, and Hanford, California, and by the Interagency Fire Forecast Warning Units (IFFWU) at Redding, California and Riverside California through 2002. In addition to Reno, Sacramento and Hanford, the NWS plans to begin to provide fire weather services from Eureka, California, Medford, Oregon, Monterey California, Los Angeles at Oxnard, California, Las Vegas, Nevada, and San Diego, California, starting in January 2003. These latter offices, which are referred to as "spin-up WFOs," will engage in fire weather training including the provision of practice fire weather forecasts prior to service transfer.

3. The NWS Western Region will continue to follow its agency policy regarding providing non-federal, non-wildfire services. The policy allows support to nonfederal agencies for pre-suppression activities during the fire season, and non-wildfire since prescribed burns have the potential for escape.

4. The NWS will coordinate with CWCG during the development of proposed alterations in the fire weather program and services provided in California. NWS developed proposals will be provided to CWCG for review, assessment, and comment prior to adoption and implementation. NWS will consider any concerns expressed by CWCG, especially as related to performance integrity, in its assessment of change proposals in the fire weather program and services provided.

VI. Responsibilities of Agencies

A. CWCG Responsibilities

1. CWCG shall provide office space in Redding and in Riverside for the GACC IFFWUs. CWCG shall provide two or more full-time Federal fire weather meteorologists at each location in Redding and in Riverside, as well as office space, utilities, and basic telephone communications in the GACCs. The CWCG fire weather meteorologists are funded through an interagency agreement with the U.S. Forest Service. Direction to the IFFWUs is provided by CWCG, with the U.S. Forest Service providing administrative supervision for the fire weather meteorologists.
2. CWCG will provide office space to assigned and detailed NWS employees in the Redding and Riverside IFFWUs.
3. CWCG IFFWUs will provide opportunities to NWS employees for details to Redding and Riverside during the summer. These details will be coordinated between an employee's NWS office and IFFWU.
4. The CWCG meteorologists shall be permitted to attend NWS sponsored training courses and seminars to maintain currency in fire weather.
5. The host GACC shall provide NWS employees and supervising Weather Forecast Offices (WFOs) with copies of policies, guidelines, and instructions impacting working conditions, behavior, security, and safety.
6. The host GACC shall furnish routine office supplies and expendables normally used in the office environment.
7. The CWCG agencies shall provide copies of their policies, guidelines, and instructions on agency material that is beneficial to improving coordination and cooperation.
8. Training requests for meteorologists to instruct at CWCG agency fire courses will be requested through the respective IFFWU's for coordination and scheduling with NWS meteorologists.

B. NWS Responsibilities

1. The NWS shall provide one full-time NWS meteorologist at each IFFWU. Other NWS meteorologists shall be available for dispatch to the IFFWUs on a temporary basis during periods of high to extreme fire danger under the National Fire Danger Rating System (NFDRS), or during protracted periods of fire activity.
2. The NWS shall provide adequate advance notice of training courses normally available to NWS meteorologists and will ensure that such training is made available to CWCG meteorologists working at the IFFWUs.
3. The NWS shall continue to provide data to the IFFWUs at the same level as Provided when this agreement was signed. The NWS shall continue this data flow until the CWCG has deployed and tested its own data service and is satisfied the NWS data flow can be discontinued.
4. The NWS shall provide GACC meteorologists with copies of all policies, guidelines, and instructions that may impact the provision of fire weather services.

5. The NWS shall provide GACC meteorologists with such expendables and supplies that are uniquely made available to other Incident Meteorologists (IMET).
6. During each fire season, the NWS offices at Sacramento and Hanford will assure that all fire weather forecasts are prepared and issued by qualified fire weather forecasters.

C. Joint Responsibilities

1. The IFFWUs in Redding and Riverside will be the CWCG focal point for coordination with NWS on the annual process of documenting and monitoring standards for fire weather forecasts and services of the NWS offices serving California. This effort will be planned and completed by a NWS and CWCG User Assessment Team (UAT).
2. The NWS and CWCG will develop a mutually acceptable transition plan effective through December 31, 2002, that will define the process and standards needed to prepare the WFO's to do future fire weather forecasts and warnings in California.
 - a. The transition plan will define the process needed to prepare WFOs and IFFWUs to coordinate responsibility for fire weather services in California.
 - b. The transition plan is a requirement of the NWS Modernization Transition Committee for Consolidation/Automation/Closure decision letter dated September 29, 1999.
 - c. The transition plan will incorporate the role of the CWCG IFFWUS to meet the needs of the agency fire managers and it must be compatible with the transition efforts of NWS.
 - d. The transition plan will be developed and monitored by the NWS and CWCG UAT and it will be updated, as appropriate, by the UAT as the transition occurs.
 - e. The transition plan will be approved and signed by the Chairman of CWCG and the NWS Western Regional Director.
3. The NWS and CWCG will prepare an Annual Operating Plan for Fire Weather Services in California (AOP) for the GACC IFFWUs and NWS WFGs with fire weather areas of responsibility in California. The AOP, which will be signed by the Chairman of CWCG and the NWS Meteorologist's in Charge, will identify the specific services to be provided and, upon signature, it will become part of this agreement. As such, the AOP can amplify but will not fundamentally modify the basic assumptions and responsibilities as set forth in this agreement. The AOP will be developed annually no later than May 1.
4. NWS and CWCG will decide by December 1, 2000, the appropriate area of influence for the fire weather zones for each WFO. This will allow the NWS to spin-up WFOs to issue practice fire weather forecasts for future fire weather areas that will be their responsibility. This will be a part of the AOP.
5. The NWS WFOs in Sacramento and Reno, and CWCG IFFWUs at Redding will coordinate fire weather forecasts and fire weather watches and red flag warnings for Northern California on a daily basis during the fire season to ensure consistency of forecasts. In the event that forecast disagreements for common borders cannot be resolved via consensus, the WFO at Sacramento will retain final authority to resolve the issue.
6. The NWS WFO at Hanford and the CWCG IFFWU at Riverside will coordinate fire weather

forecasts and "Fire Weather Watch's" and "Red Flag Warnings" for Southern California on a daily basis during the fire season to ensure consistency of forecasts. In the event that forecast disagreements for common borders cannot be resolved via consensus, the WFO at Hanford will retain final authority to resolve the issue.

7. CWCG and NWS are committed to work together to resolve problems in near-real time. Issues from either party will be brought to the attention of the appropriate management level immediately for possible resolution. Problems that are not brought forward in a timely manner are considered null and void. Fire managers should first work with their local WFO for resolution, then the closest IFFWU, and then the agency CWCG representative. NWS WFOs should first work with the local fire manager for resolution, then the closest WFO in Sacramento or Hanford, and then the Western Regional Office, Division of Meteorological Services.

8. This agreement tiers to the "National Agreement for Meteorological Services in Support of Agencies with Land Management and Fire Protection Responsibilities".

VII. Mutual Interest of the Parties

The costs of this activity are equitably apportioned. During the time of the agreement the NWS will provide one FTE at both the Redding and Riverside IFFWUs, while the CWCG will provide three or more FTEs at each of these sites. The IFFWUs will be responsible for fire weather forecasts for their respective areas in addition to the statewide Fire Behavior Predictive Services and other duties which required by the CWCG agencies and cannot be provided by the NWS. In addition, the CWCG will provide all office space at the IFFWUs.

VIII. Procedures for Requesting and Supplying Services

Procedures for requesting and supplying services will be provided in the AOP.

It will be the goal of the NWS and CWCG to provide IMETs and Advanced Technological Meteorological Units (ATMU), as requested. In addition, it will be the IMET's goal to be en route within twelve (12) hours of the resource order reaching the NWS office. The CWCG is committed through agreed upon dispatch channels to facilitate and assist in this mobilization of IMETs and ATMUs.

IX. Billing Procedures

Billing procedures are outlined in Section VI, of the "National Agreement for Meteorological Services in Support of Agencies with Land Management and Fire Protection Responsibilities."

X. Modifications

This agreement is a consolidated document applicable to all WFOs that provide service to CWCG. This agreement may be modified at any time by the mutual written consent of the signatory parties. No modifications will be implemented or effective until approved and signed by the Director, NWS Western Region, and the Chairman of CWCG. This agreement is subject to the availability of funds:

XI. Termination

This agreement will be reviewed periodically, but not less than annually. It may be subject to reconsideration at such other times as may be required and as agreed to by the parties. Either party

may terminate this instrument in whole, or in part, before the date of expiration, by providing sixty (60) days advance written notice. Neither party may terminate this agreement between March 1 and November 1 (fire season) of any year. Termination notice will come from either the Director, NWS Western Region, or the Chairman of CWCG. If the agreement is terminated, then providers of staff, furniture, equipment, and technology are required to move, surplus or salvage same during the notification period, except NWS will have six months (180 days) to place staff originally employed by NWS.

XII. Length of Time of the Agreement

This agreement shall remain in effect until December 31, 2002. The next agreement will be finalized and signed by December 1, 2002.

XIII. User Assessment Team

The NWS and CWCG will form a UAT that will: (1) evaluate fire weather services for California and recommend improvements, and (2) guide activities associated with training of spin-up WFOs and assess their practice fire weather forecasts to enable them to meet the fire weather forecast transfer date of January 1, 2003. The UAT shall meet bi-annually in March and November. The March meeting will decide on changes in fire weather services for the upcoming fire weather season, which will be reflected in AOPs. The November meeting will evaluate the past season fire weather services from IFFWUs, WFOs and spin-up WFOs and recommend changes for the next fire weather. The evaluation and recommendations shall be contained in a written report to the CWCG Chairperson and Western Region Regional Director to be delivered no later than December 15, of each year. The NWS and CWCG will develop a Charter and operating procedures and define UAT membership by November 1, 2000.

XIV. Terms of the Agreement

The terms of this agreement shall become effective upon execution by NWS and CWCG and shall remain in effect until December 31, 2002, or such time as the agreement is terminated by mutual agreement.

XV. Resolution of Disagreements

Should disagreement arise on the interpretation of the provisions of this agreement, or amendments and/or revisions thereto, that cannot be resolved at the operating level, the area(s) of disagreement shall be stated in writing by each party and presented to the Chairman of CWCG and the Western Regional Director of NWS. An agreement on interpretation will be reached within thirty days.

APPROVED:

Vickie Nadalski
Regional Director
Western Region
National Weather Service
National Oceanic and
Atmospheric Administration

Daniel G. Clark
Chairman
California Wildfire Coordinating Group

Date: 12-07-00

Date: 12/21/00

Appendix I

California Wildfire Coordinating Group Members

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APPENDIX J

NATIONAL AGREEMENT FOR METEOROLOGICAL SERVICES IN SUPPORT OF AGENCIES WITH LAND MANAGEMENT AND FIRE PROTECTION RESPONSIBILITIES.

This document is being updated and still only in draft form. Not included this year.

APPENDIX K

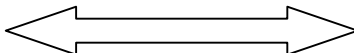
Definition:

Dry Lightning Event: A thunderstorm event that is not accompanied by enough precipitation to significantly wet the fuels.

Significant precipitation is defined as ranging from $\geq .05$ inches for grass or brush fuels to $\geq .15$ inches for closed-canopy timber/heavy fuels

The following matrix is available to California meteorologists as an aid in making warning decisions involving dry lightning:

Percentage of warned-for area affected by thunderstorms	<u>Percentage of Strikes that are Dry</u>				
		0-25	26-50	51-75	76-100
	≤ 30	No	No	M	W
	31-69	No	M	M	W
	≥70	No	M	W	W

Wetter  Drier

W = Warning M = Marginal No = No Warning